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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,293	04/26/2001	Subhas Bothra	020408-001200US	1043

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EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT PAPER NUMBER

2826

DATE MAILED: 03/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/844,293

Applicant(s)

BOTHRA

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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Serial Number: 09/844293 Attorney's Docket #: 020408-001200US

Filing Date: 4/26/01;

Applicant: Bothra

Examiner: Alexander Williams

Applicant's Amendment in Paper # 7, filed 12/10/02, has been acknowledged.

Claims 9 to 14 have been canceled.

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The disclosure is objected to because of the following informalities: The abstract should describe the capacitor structure.

Appropriate correction is required.

The drawings are objected to because figures 1A to 3B should be labeled "Prior Art." Also in all the drawing, the cross-sectional views in the drawings are not correctly or acceptably cross hatched. Without the correct cross-hatched views, the drawings are confusing and not easy to comprehend without a direct layer-for-layer association with the specification. Applicant is directed to MPEP § 608.02 and specifically, the table at page 600-51 (Rev 14, Nov. 1992) of the MPEP for help in correcting the drawings.

Correction is required.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the portion of a first selected one of said stacked metal layers and a portion of a second selected one of said stacked metal layers, said second selected stacked metal layer portion above and adjacent said first selected stacked metal layer portion and second capacitor metal plate layer **under** said second capacitor dielectric layer over and extending from said first capacitor metal plate layer in claim 1, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Note: In claim 1, line 4, after "comprising" insert colon --:--.

Claims 1 to 8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear and confusing to what is meant by "a portion of a first selected one of said stacked metal layers and a portion of a second selected one of

said stacked metal layers, **said second selected stacked metal layer portion above and adjacent said first selected stacked metal layer portion.**” Where is this shown in the drawing? Is this portion of a second selected one of said stacked metal layers of said second selected stacked metal layer portion the same as the second capacitor metal plane plate layer? Also, it is unclear and confusing to what is meant by “a second capacitor metal plate layer under said second capacitor dielectric layer and over and extending from said first capacitor metal plane layer.” It appears Applicant’s drawing that the second plate is over the second dielectric layer. Which is this shown in the drawings?

Any of claims 1 to 8 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

Initially, it is noted that the 35 U.S.C. § 103 rejection based on a portion of a second selected one of said stacked metal layers of said second selected stacked metal layer portion and the second capacitor metal plane plate layer deals with an issue (i.e., the integration of multiple pieces into one piece or conversely, using multiple pieces in replacing a single piece) that has been previously decided by the courts.

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In Howard v. Detroit Stove Works 150 U.S. 164 (1893), the Court held, "it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together...."

In In re Larson 144 USPQ 347 (CCPA 1965), the term "integral" did not define over a multi-piece structure secured as a single unit. More importantly, the court went further and stated, "we are inclined to agree with the solicitor that the use of a one-piece construction instead of the [multi-piece] structure disclosed in Tuttle et al. would be merely a matter of obvious engineering choice" (bracketed material added). The court cited In re Fridolph for support.

In re Fridolph 135 USPQ 319 (CCPA 1962) deals with submitted affidavits relating to this issue. The underlying issue in In re Fridolph was related to the end result of making a multi-piece structure into a one-piece structure. Generally, favorable patentable weight was accorded if the one-piece structure yielded results not expected from the modification of the two-piece structure into a single piece structure.

Claim 1, **insofar as it can be understood**, is rejected under 35 U.S.C. § 102(e) as being anticipated by Saia et al. (U.S. Patent # 5,973,908).

For example, in claim 1, Saia et al. (figures 1 to 12) specifically figures 6 and 9 show integrated circuit having a substrate **10** and plurality of stacked metal layers **24,36,40,44,48,52,20,58** thereover, said metal layers delineated as interconnections for said integrated circuit, a high density capacitor structure **54** between adjacent stacked metal layers comprising: a portion of a first selected one of said stacked metal layers (**lowest 54, shown as 24 in figure 6**) and a portion of a second selected one of said stacked metal layers (**second from the bottom of 54, shown as 40 in figure 6**), said second selected stacked metal layer portion above and adjacent said first selected stacked metal layer portion; a first capacitor dielectric layer over said first selected stacked metal layer portion (**34 or shown as 36 in figure 6**); a first capacitor metal plate layer (**3rd 54, 36 or shown as 40 in figure 6**); a second capacitor dielectric layer (**38 or shown as 44 in figure 6**); a second capacitor metal plate layer (**40 or shown as**

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48 in figure 6) under said second capacitor dielectric layer and over and extending **(shown as 48a in figure 6)** from said first capacitor metal plane layer; and a metal capacitor via layer **36a**; and a first via **58** connecting said first selected stacked metal layer portion and said second selected stacked metal layer portion to form a second terminal of said capacitor structure.

Therefore, it would have been obvious to one of ordinary skill in the art to use the a portion of a second selected one of said stacked metal layers of said second selected stacked metal layer portion and the second capacitor metal plane plate as "merely a matter of obvious engineering choice" as set forth in the above case law.

Claim 2, **insofar as it can be understood**, is rejected under 35 U.S.C. § 103(a) as being unpatentable over Saia et al. (U.S. Patent # 5,973,908) in view of Applicant's Prior Art Figure 1a to 3B.

Saia et al. show the features of the claimed invention as detailed above, but fails to explicitly show at least one of said first or second stacked metal layers comprises a plurality of stacked, contiguous metal layers of differing composition.

Applicant's Prior Art Figure 1a to 3B discloses at least one of said first or second stacked metal layers comprises a plurality of stacked, contiguous metal layers of differing composition for the purpose of reducing the size of topography capacitors integrate easily into current device processing.

Therefore, it would have been obvious to one of ordinary skill in the art to Applicant's Prior Art figures 1a to 3B stack metal layers to modify Saia et al.'s stack layers for the purpose of reducing the size of topography capacitors integrate easily into current device processing.

Claims 3 to 8, **insofar as they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Saia et al. (U.S. Patent # 5,873,908) in view of Hoshiba (U.S. Patent # 5,506,748).

Saia et al. show the features of the claimed invention as detailed above, but fails to explicitly show the first capacitor dielectric layer and the first capacitor metal plate layer are laterally co-extensive.

Hoshiba is cited for showing a capacitor for a semiconductor integrated circuit. Specifically, Hoshiba (figures 1 to 7) specifically figures 1 to 3 discloses show the first

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capacitor dielectric layer and the first capacitor metal plate layer are laterally co-extensive (see column 3, lines 8-12, lines 39-54) (column 4, lines 3-24, lines 36-49) for the purpose of designing a capacitor smaller to meet the requirements of high density integration.

Therefore, it would have been obvious to one of ordinary skill in the art to Hoshiba's dielectric layer and plate layer to modify Saia et al.'s layers for the purpose of designing a capacitor smaller to meet the requirements of high density integration.

Response

Applicant's arguments filed 12/10/02 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The insertion of Applicant's additional claimed language, for example, "high density in claim 1" cause for further search and consideration to make this action final.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

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The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/532,296,300-306,295,71,906,68,522	9/16/02 3/19/03
Other Documentation: foreign patents and literature in 257/532,296,300- 306,295,71,906,68,522	9/16/02 3/19/03
Electronic data base(s): U.S. Patents EAST	9/16/02 3/19/03

Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.

Any inquiry concerning this communication or any earlier communication from the examiner should be directed to ***Examiner Alexander Williams*** whose telephone number is **(703) 308-4863**.

Any inquiry of a general nature or relating to the status of this application should be directed to the ***Technology Center 2800 receptionist*** whose telephone number is **(703) 308-0956**.

3/20/03



Primary Examiner
Alexander O. Williams